PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 8094WO	**FOR FURTHER ACTION**	See Form PCT/IPEA/416
International application No. **PCT/AU2004/001693**	International filing date *(day/month/year)* 3 December 2004	Priority date *(day/month/year)* 4 December 2003

International Patent Classification (IPC) or national classification and IPC

Int. Cl. [7] B21K 1/00, 1/76, B21J 5/02, 5/12, B62D 3/12, 5/22

Applicant

BISHOP INNOVATION LIMITED et al

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 3 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:

a. [X] *(sent to the applicant and to the International Bureau)* a total of **2** sheets, as follows:

- [ ] sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
- [ ] sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

b. [ ] *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or table related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

[X]	Box No. I	Basis of the report
[ ]	Box No. II	Priority
[ ]	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
[ ]	Box No. IV	Lack of unity of invention
[X]	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
[ ]	Box No. VI	Certain documents cited
[ ]	Box No. VII	Certain defects in the international application
[ ]	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of the report
6 July 2005	21 October 2005
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer **JASON PREMNATH** Telephone No. (02) 6283 2127

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/AU2004/001693

Box No. I Basis of the report

1. With regard to the **language,** this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

   ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:

   ☐ international search (under Rules 12.3 and 23.1 (b))

   ☐ publication of the international application (under Rule 12.4)

   ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

   ☐ the international application as originally filed/furnished

   ☒ the description:

   pages **1 - 4, 6 - 13** as originally filed/furnished
   pages* **5** received by this Authority on **6 July 2005** with the letter of **6 July 2005**
   pages* received by this Authority on with the letter of

   ☒ the claims:

   pages **14 - 15** as originally filed/furnished
   pages* as amended (together with any statement) under Article 19
   pages* **16** received by this Authority on **6 July 2005** with the letter of **6 July 2005**
   pages* received by this Authority on with the letter of

   ☒ the drawings:

   pages **1 - 10** as originally filed/furnished
   pages* received by this Authority on with the letter of
   pages* received by this Authority on with the letter of

   ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

   ☐ the description, pages
   ☐ the claims, Nos.
   ☐ the drawings, sheets/figs
   ☐ the sequence listing (*specify*):
   ☐ any table(s) related to the sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

   ☐ the description, pages
   ☐ the claims, Nos.
   ☐ the drawings, sheets/figs
   ☐ the sequence listing (*specify*):
   ☐ any table(s) related to the sequence listing (*specify*):

* *If item 4 applies, some or all of those sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/AU2004/001693

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1 - 21	YES
	Claims		NO
Inventive step (IS)	Claims	1 - 21	YES
	Claims		NO
Industrial applicability (IA)	Claims	1 - 21	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

Novelty (N) and Inventive Step (IS)

Documents cited in the International Search Report:

EP 1112791

WO 2002/076653

GB 2088256

JP 09141380

These documents represent the background art.

The claims 1 – 21 define a die apparatus for performing a flashless forging of the steering rack. None of the cited documents discloses all the essential features of the invention, in particular, "at least a portion of the first die member being shaped substantially as the obverse of the teeth of the rack" and "the first and the second members forming a toothed portion". The claims 1 – 21 are novel and the considered to involve an inventive step.

teeth of said steering rack are forged to net shape by said forging operation. Preferably, the cross section of the toothed portion of said steering rack is substantially D-shaped.

Preferably, said blank has a first cylindrical portion and a second cylindrical portion smaller in diameter than said first cylindrical portion, said second cylindrical portion being forged to form the toothed portion of said steering rack, the shank of said steering rack comprising said first cylindrical portion. Preferably, said blank further comprises a third cylindrical portion, substantially equal in diameter to said first cylindrical portion, said second cylindrical portion being between said first and third cylindrical portions.

Preferably, said blank is heated to a warm forging temperature prior to said forging operation.

18. A method of manufacturing a steering rack as claimed in claim 16 wherein the cross section of the toothed portion of said steering rack is substantially D-shaped.

19. A method of manufacturing a steering rack as claimed in claim 16 wherein said blank has a first cylindrical portion and a second cylindrical portion smaller in diameter than said first cylindrical portion, said second cylindrical portion being forged to form the toothed portion of said steering rack, the shaft of said steering rack comprising said first cylindrical portion.

20. A method of manufacturing a steering rack as claimed in claim 19 wherein said blank further comprises a third cylindrical portion, substantially equal in diameter to said first cylindrical portion, said second cylindrical portion being between said first and third cylindrical portions.

21. A method of manufacturing a steering rack as claimed in claim 16 wherein said blank is heated to a warm forging temperature prior to said forging operation.